

**A KEY TO SPECIES OF THE GENUS *ONITIS* FABRICIUS (COLEOPTERA:
SCARABAEIDAE: SCARABAEINAE) FROM CHINA, WITH THE
DESCRIPTION OF A NEW SPECIES AND A NEW RECORD FOR CHINA**

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Abstract.—The genus *Onitis* Fabricius in China includes 10 species, among them *Onitis brevidens*, new species, and *Onitis feae* Felsche, a new record for China. The distinctive characters of the new species are discussed. A key to species of *Onitis* from China, habitus photographs, and illustrations of the protibiae, profemora, mesocoxae, and genitalia are provided.

Key Words: China, *Onitis*, Scarabaeinae, Scarabaeidae, Coleoptera, new species

The genus *Onitis* (Coleoptera: Scarabaeoidea: Scarabaeidae: Scarabaeinae: Onitini) was established by Fabricius in 1798. *Scarabaeus inuus* Fabricius, 1781 from the Congo was selected by Fabricius as the type species. In 1871, Harold regarded *S. inuus* as a synonym of *Onitis sphinx* (Fabricius 1775). Lansberge revised *Onitis* in 1875, and 61 world species were known at that time. Janssens published a revision of Onitini in 1937, and 113 species of *Onitis* were described in the monograph. There are 154 world species of *Onitis* with ten species currently known in China, including one new species described here. There are 124 species in the Afrotropical Region, 5 species in the Palaearctic Region, and 25 species in the Oriental Region.

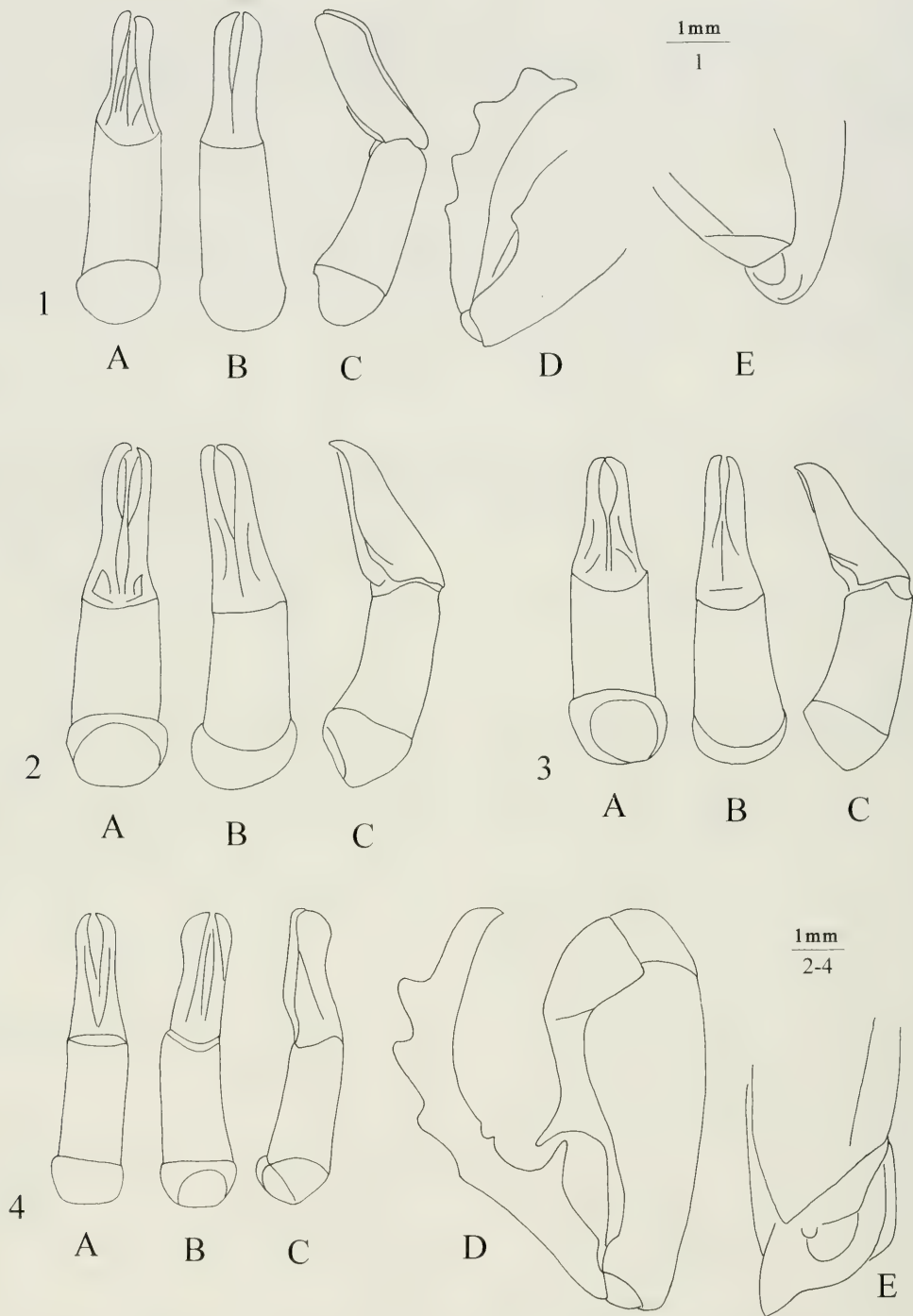
The male legs usually show modifications. Species of *Onitis* are tunnellers, and their nesting behavior is complex (Philips et al. 2004). They can be collected from various animal dung, such as cow, elephant, gaur, buffalo, and pig (Hanboonsong and Masumoto 2000).

In this paper, ten species of *Onitis* from China are treated, among them *Onitis brevidens*, new species, and *Onitis feae* Felsche, a new record for China. A key to species from China, habitus photographs, and illustrations of protibiae, profemora, mesocoxae, and genitalia are given.

Onitis Fabricius, 1798

Onitis Fabricius 1798: 2. Type species: *Scarabaeus inuus* Fabricius, 1781. Desig. by Fabricius 1798.

Description.—Male: Oblong in shape, with legs stout and short (except proleg). *Head:* Shape narrow. Ocular lobes united by a carinate suture with clypeus. Clypeal margin rounded or slightly excised at middle. Antenna 9-segmented, all segments short except basal; club compact, with first segment cup-shaped, smooth, chitinous, enclosing succeeding segment. Mandible oval, with long terminal fringe. Membranous lobe of maxilla broad, palpus short. Labium and labial palpus clothed with long



Figs. 1-4. *Onitis* species. 1, *O. brevidens*. 2, *O. excavatus*. 3, *O. falcatus*. 4, *Onitis feae*. A = genitalia in ventral view; B = genitalia in dorsal view; C = genitalia in lateral view; D = protibia and profemur; E = mesocoxa.

bristles, palpus flat, basal joint weakly dilated, 2nd long, 3rd minute. *Pronotum*: Surface without process or excavation. Base with small prominence at middle, usually without complete margin, but with pit or impression on each side near middle. *Scutellum*: Visible but minute. *Elytron*: Surface with simple, narrow epipleura, delimiting carina strongly marked and straight. *Abdomen*: Completely covered with a carina around sides of all segments and pygidium. *Legs*: Proleg elongate; procoxa prominent; protibia slender and strongly curved toward apex, armed with 4 external teeth and with 1 or more teeth on lower face, without articulated terminal spur, but with apex produced into fingerlike process; protarsus absent. Mesocoxa long, parallel, widely separated; mesotibia with angular projection at inner edge. Pro-, meso- and metafemora, or some of them, toothed at edge, or mesotrochanter spinose. Meso- and metatarsi with progressively shortened segments, basal joint more than twice as long as 2nd.

Female: Head sometimes with frontal tubercle or short horn. Protibia always broad, with stronger teeth, and with articulated terminal spur.

Diagnosis.—*Onitis* is recognized easily by the absence of protarsi, mesotibiae short and dilated, the presence of 2 basal impressions on the pronotum, visible scutellum, and strong lateral carina on the elytra.

KEY TO ADULT MALES OF *ONITIS*
FROM CHINA

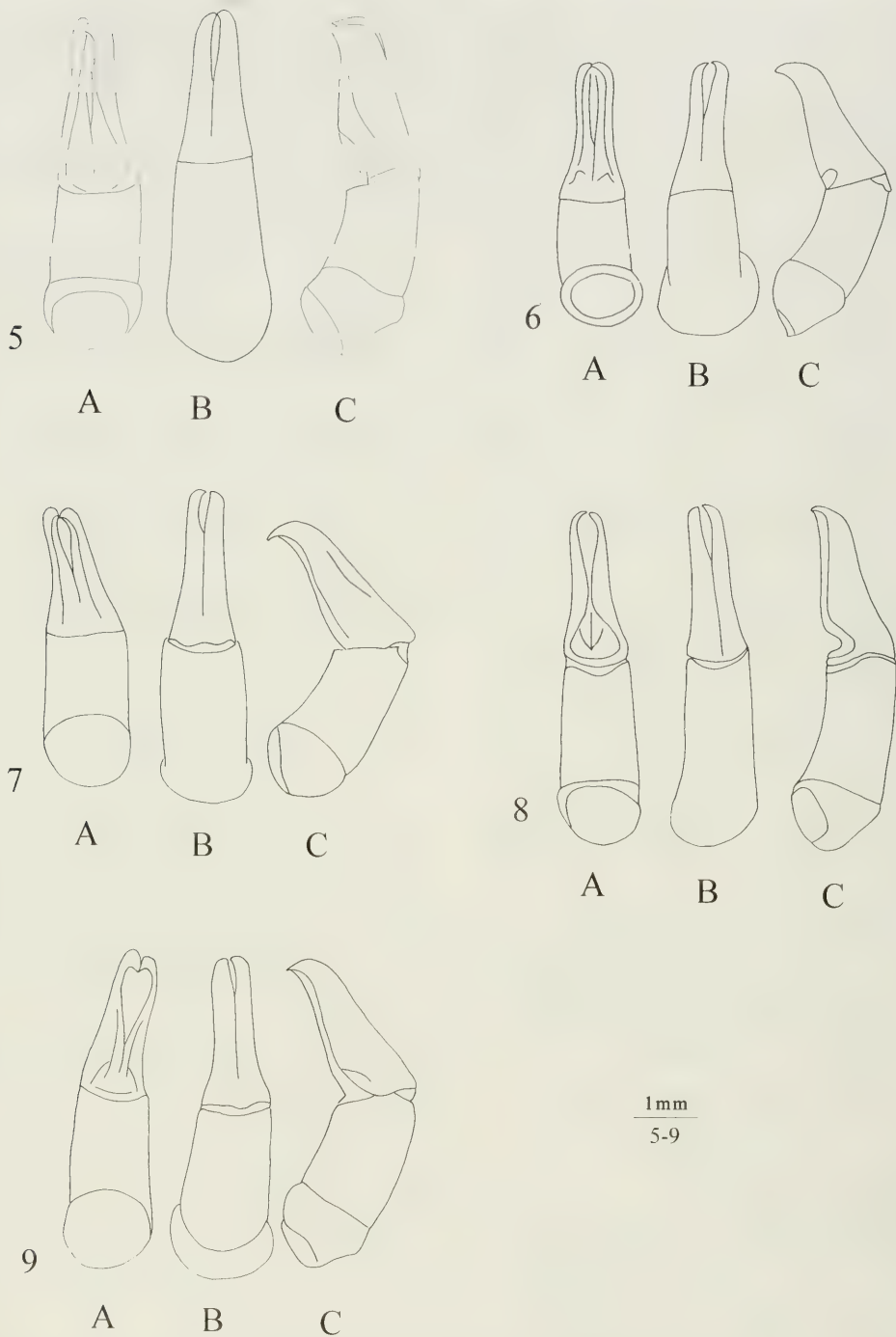
- 1. Pygidium smooth, glabrous 2
- Pygidium more or less setose 9
- 2. Frontoclypeal carina simple; pronotum green, elytra dark yellow (Figs. 5A–C, 14)
. *Onitis humerosus* (Pallas 1771)
- Frontoclypeal carina interrupted or with tubercle at middle; pronotum and elytra black . . . 3
- 3. Pronotum feebly punctate, punctures shallow and vague 4
- Pronotum distinctly punctate, punctures deep and clear 5
- 4. Metasternum transversely excavated at middle (Figs. 2A–C, 11) . . . *O. excavatus* Arrow, 1931

- Metasternum not excavated at middle (Figs. 3A–C, 12) *O. falcatus* (Wulfen 1786)
- 5. Metasternum longitudinally grooved in front 6
- Metasternum flat, not grooved 8
- 6. Ventral surface entirely metallic (Figs. 6A–C, 15) *O. philemon* Fabricius, 1801
- Ventral surface not metallic 7
- 7. Basal margin of pronotum straight
. *O. intermedius* Frivaldszky, 1892
- Basal margin of pronotum round (Figs. 7A–C, 16) *O. spinipes* (Drury 1770)
- 8. Frontoclypeal carina broadly interrupted; protibia with terminal external tooth projecting in front (Figs. 8A–C, 17)
. *O. subopacus* Arrow, 1931
- Frontoclypeal carina narrowly interrupted; protibia with terminal external tooth tapering in front (Figs. 9A–C, 18)
. *O. virens* Lansberge, 1875
- 9. Profemur and protibia with strong tooth; mesocoxa toothed at its posterior end (Figs. 4A–E, 13) *O. feae* Felsche, 1907
- Profemur and protibia without or with feeble tooth; mesocoxa not toothed at its posterior end (Figs. 1A–E, 10) *O. brevidens*, n. sp.

***Onitis brevidens* Bai, Yang, and Zhang,
new species**
(Figs. 1A–E, 10)

Holotype male.—Length 14.3 mm, width 8.1 mm. Shape broadly oval, compact and convex. Color black, subopaque; head, lower surface, and legs dark red; pygidium and lower surface clothed with brown setae; elytra bearing a fringe of similar setae on hind margin.

Head: Clypeus elliptical, front margin imperceptibly notched at middle, surface finely and closely rugulose, with short, transverse, slightly curved or angular carina. Frontoclypeal region with straight, sharply elevated carina. Frons slightly rugopunctate, not shining. Vertex with shorter, transverse, curved carina immediately before carinate posterior margin of head. *Pronotum*: Strongly, densely punctate, without smooth median line, but with feebly indicated median groove. Base almost completely margined; basal foveae deep with intervening space finely rugose, opaque, distinctly lobed in middle. *Elytron*: Surface convex and entirely opaque except



Figs. 5-9. *Onitis* species. 5, *O. humerosus*. 6, *O. philemon*. 7, *O. spinipes*. 8, *O. subopacus*. 9, *O. virens*. A = genitalia in ventral view; B = genitalia in dorsal view; C = genitalia in lateral view.



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Figs. 10–18. Habitus photographs of *Onitis* species. 10, *O. brevidens*. 11, *O. excavatus*. 12, *O. falcatus*. 13, *Onitis feae*. 14, *O. humerosus*. 15, *O. philemon*. 16, *O. spinipes*. 17, *O. subopacus*. 18, *O. virens*.

at humerus. Shape parabolic; elytra 0.4 times wider than long medially. Striae faint; intervals slightly carinate along middle, outer ones slightly, unevenly punctate. *Pygidium*: Surface feebly rugulose, thinly clothed with erect, long, reddish setae. Shape parabolic; 1.9 times wider than long medially. *Metasternum*: Surface with conspicuous granules, granules closer and finer at front and sides, with long, erect setae; middle broadly grooved. *Abdomen*: Surface setae at sides, smooth at middle. *Legs*: Profemur with feeble tooth near middle of front edge. Protibia elongate, with tip strongly curved and produced, with finely serrate carina beneath, without tooth near base (Fig. 1D). Mesocoxa not toothed at posterior apex, mesotibia not excised at base (Fig. 1E). Male genitalia as in Figs. 1A–C.

Female.—Length 16.8 mm; width across humeri 8.9 mm. Similar to male except profemur without tooth near middle of front edge.

Variation in paratype series.—Some of the four paratypes have a much darker elytra and pronotum. Measurements: Length 13.4–16.1 mm, width across humeri 7.9–8.3 mm.

Type material.—Holotype: P. R. CHINA. ♂, Yunnan: Menghai, 1,250 m, 24 February 1957, coll. Fu-Ji PU. Paratypes: P. R. CHINA. 1 ♂, 1 ♀, Yunnan: Kaida, 1956, coll. unknown; 1 ♂, Yunnan: Jingdong, 1,200 m, 2 March 1957, coll. Monchadsky; 1 ♀, same data as holotype. Holotype and paratypes deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, P. R. China (IZAS).

Distribution.—China (Yunnan).

Diagnosis.—The new species is similar to *Onitis feae* but differs primarily by its smaller size, darker color, profemur and protibia with a feeble tooth, protibial apex with a short, fingerlike process, and mesocoxa not toothed at its posterior end. *Onitis feae* is larger, shining, the profemur and protibia each with a sharp, long tooth, pro-

tibia apex with a long, fingerlike process, and the mesocoxa is toothed at its posterior end.

Etymology.—The name is from the Latin *brevis*, referring to the profemur with a feeble tooth near the middle of its front edge.

Onitis feae Felsche, 1907

(Figs. 4A–E, 13)

Onitis feae Felschea 1907: 293.

Material examined.—P. R. CHINA. Yunnan: Menghai, 1 ♂, 1,300 m, 28 February 1957, coll. Da-Hua LIU; Jingdong, 1 ♀, 1,300 m, 6 March 1957, coll. Panfilov. VIETNAM. Hanoi, 4 ♂, 6 ♀, 20 m, 23 December 2000, coll. Wen-Zhu LI. All specimens are deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, P. R. China (IZAS).

Distribution.—China (Yunnan), Vietnam, Thailand, Burma, India.

Notes.—This is a new record for China. The specimens were collected from cow dung.

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